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ANNUAL GRADUATE FORTNIGHT

TUMORS

October 17 to 28, 1932

SOME FACTS CONCERNING TUMORS OF THE BRAIN*

CHARLES A. ELSBERG

During the past decade, the knowledge of tumors of the brain has been greatly advanced, and it is well nigh impossible for a speaker to present a review of the progress that has been made in the time that is allowed me. I shall limit myself, therefore, to the presentation of some facts concerning tumors of the brain, and shall, in what follows, call to your attention some aspects of the diagnosis, the localization, and the treatment of these growths.

There is perhaps no better way to introduce the subject than by a few categorical statements concerning some symptoms of tumors of the brain whose importance is not as fully recognized as it deserves to be: Every individual who suffers from persistent headaches, in whom no other cause for the headache can be discovered, even though no other evidence of an intracranial disease can be found, should be considered a brain tumor suspect.

Those of us who see patients with intracranial growths, have become more and more impressed with the fact that almost every patient who has a tumor of the brain will show some abnormality of behavior or some alteration of character if he is carefully observed. Therefore in every individual who begins to suffer from mental disturbances

*Delivered October 17, 1932.

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or in whom there has been a marked character change, an intracranial growth must be considered a possibility.

Furthermore in every individual who has had one or more convulsive seizures, even though he has had a preceding cranial trauma or an encephalitis, a cerebral new-growth must be excluded before the conclusion is reached that the symptoms are due to the injury of the skull or to an intracranial inflammatory or vascular lesion.

It is unnecessary, before this audience, to say anything regarding the fully developed symptoms of tumors of the brain, for no one would fail to suspect an intracranial growth in an individual who has increasingly severe headaches, choked discs, and evidences of paralyses of cranial nerves, loss of power in limbs, changes in the reflexes, evidences of increased intracranial pressure on x-ray films of the skull, etc.

It is important, however, to speak of the slight symptoms which patients with tumors of the brain may present—symptoms which are often considered of no serious significance by the patient and sometimes by the physician. Why is it—I have often asked myself—that so many patients already have marked loss of function when they are first seen by the neurologist and the surgeon? Why is it that, in so many instances, patients are first seen when there is a high degree of papilledema so that vision is greatly endangered? What is the reason for the fact that every neurological surgeon of experience has seen and operated upon numerous patients in whom vision had been lost before the operation could be performed, the growth completely removed, and the patient restored to health—but blind? And why, in so many patients, is an operation for a tumor of the brain performed only many months, if not years after symptoms first appeared? I would venture the statement that more than one-half of the patients who have been under my care for surgical treatment, gave a history which showed that disturbances had existed for long periods, and that the significance of these disturbances was only recognized when the disease was in an advanced stage.

Occasionally, the physician may have failed to recognize that slight disturbances were important. More often, I think, the patient and his family have been unaware of the fact that the slight symptoms were the warning signs of a serious disorder. It is therefore of no little importance that all individuals should be taught by greater diffusion of knowledge that slight disturbances of health are always of moment, and that with special reference to tumors of the brain, the medical profession should more fully appreciate the significance and the importance of slight and early disturbances. But I would go further than this. The facts concerning tumors of the brain add one more argument, if argument is necessary, to the importance of health examinations of all individuals at regular intervals. It has often been emphasized, that if at regular intervals, everyone was examined by a physician, not because the individual is ill, but because he is apparently well—many diseases would be discovered more early than they are at the present time. And as in other diseases, so also in tumors of the brain, successful treatment and restoration of the individual to health will very often depend upon the stage at which treatment is begun. Therein lies the importance of a full understanding of the early and the slight symptoms which tumors of the brain produce, and the reason for a presentation of some facts concerning those early and apparently insignificant disturbances produced by intracranial growths which eventually may be found to be very significant.

There was a time when the belief was general, that, in a patient with a tumor of the brain, there must be a history of disturbances of many months, perhaps of years of duration. I have already indicated that this is often due to the fact that the symptoms were not considered of serious importance by the patient himself or herself, and sometimes by the physician. We now appreciate that a brain tumor is often an acute disease, the symptoms dating back only a few weeks. In the most malignant variety of primary intracranial growth, the story often is that the patient was apparently in good health a few weeks before.

It is not, however, in these malignant and rapidly growing tumors alone that the history of the illness may be a short one. In slowly growing benign growths—if they happen to develop in those areas of the brain which we call silent (because as far as we now know, interference with the functions of these areas produces no subjective or objective symptoms)—the history given by the patient may be a very short one. During the past six months I have operated upon and removed large meningeal tumors in two patients, both of whom declared that they had been ill only a few weeks. The tumors were so large, that they must have existed and grown for many months and perhaps for several years. In both of these individuals the diagnosis and the localization of the growth was made without difficulty. If the patients had had a "health examination" months before, the diagnosis would have been made much earlier, and the danger and difficulties of the removal of the large tumors would have been much less. The social and economic importance of periodic health examinations can not be stressed too much or too often.

Before presenting to you some facts which are of significance in tumors of the brain, a few words must be spoken concerning the different varieties of growth that occur within the cranial cavity. Some tumors increase in size slowly so that the brain is able to accommodate itself to so great an extent, that the functions of the affected part of the brain are little interfered with. Others, whether they grow slowly or rapidly, happen to be situated in so-called silent areas of the brain, and for a long time, few or slight symptoms are produced. Still others, of a different histological nature, increase in size at a rapid rate, and the disturbances of function of the affected areas are marked in proportion to the acuteness of the involvement of the brain. In some varieties of tumor, the brain is only compressed by the growth; in others there is a marked reactive swelling of the brain which contributes a great deal to the production of symptoms; in still others, the growth interferes with the large blood vessels, and as a re-

sult there are symptoms also from the part of the brain which has been deprived of its blood supply.

Therefore, the first subject that must be considered, is that of the classification of the tumors and their relative frequency in different parts of the brain. For practical purposes, one may divide the growths into the following groups:

TABLE I

The Grouping Of Tumors Of The Brain Based Upon Their Site of Origin

I. Tumors derived from the sheaths of the nervous system
   1. From or attached to the meninges
      Meningiomas (endotheliomas, meningeal fibroblastomas)
      Meningeal sarcomas
      Dermoids and epidermoids (cholesteatomas)

II. Tumors derived from the sheaths of the cranial nerves
   1. Perineurial fibroblastomas
      Tumors of the eighth cranial nerve
      Tumors of cranial nerves in the course of von Recklinghausen's disease

III. Tumors derived from blood vessels
      Hemangioblastomas
      Congenital blood vessel growths
      Perhaps some meningiomas
      Aneurisms of the large arteries

IV. Tumors derived from glandular and other specialized structures
      Pituitary
      Pineal

V. Tumors derived from the nervous tissue itself
   1. Neuroblastomas
      Neuro-epitheliomas
   2. Gliomas

Slow growing
(astrocytomas
(medulloblastomas
(oligodendrogliomas
(ependymomas
Rapidly growing (spongioblastoma multiforme)

VI. Secondary tumors
Invading cranial cavity from bones of the skull
Metastatic

In the majority of instances, the tumors included in the first four of these groups increase in size slowly, and many of them are very favorable cases for surgical treatment. The growths produce slight disturbances for long periods, but, notwithstanding, the diagnosis is rarely made early enough and treatment, whether it be by surgery or by x-ray is usually begun later than it should be. Certainly, from the standpoint of surgery, the patients are operated upon mostly in an advanced stage of their disease, as proven by the fact that the tumors with which the surgeon has to contend, are regularly of large size.

The growths included in the fifth group of Table I—those derived from the brain tissue itself and which develop within the substance of the brain, constitute at the present time, the real problem of therapy. The hope, in the future, for better results in the treatment of these patients, is in part dependent upon the more early recognition of the disease by the physician through more careful examinations and by the discovery of new diagnostic methods.

During the past few years, there has been a tendency to classify the gliomas on a histogenetic basis, the most immature forms being those whose cells correspond to the most primitive cells in the developing nervous system, the spongioblasts, and the most mature being those whose cells consists mainly of adult glia cells—the astrocytes. The most undifferentiated cell type is the spongioblast—and the most embryonic type of glioma is the spongioblastoma multiforme, for the recognition of which Dr. Globus

deserves the full credit. A classification of the gliomas, on the basis of histogenesis, is a good working hypothesis, but the viewpoint now generally held that the more immature the type of the cell, the more malignant and rapidly growing the tumor, will probably be considerably modified in the future. This much is, however, certain. The spongioblastoma multiforme is the most rapidly growing and the most malignant type of glioma with which we are acquainted. The results of the surgical treatment of tumors of the brain would be much better than they are, if it were not for the fact that the gliomas form more than one-half and the multiform spongioblastomas more than one-tenth of all intracranial growths, as the following table of our verified operative material demonstrates:

TABLE II

Relative Frequency Of 878 Operated And Verified Intracranial Tumors

Gliomas	500	=57 per cent.
Unclassified	128	
Verified by cyst fluid alone	114	
Astrocytoma	81	
Fibrillary	36	
Protoplasmic	14	
Mixed	31	
Oligodendroglioma	7	
Spongioblastoma polare	4	
Pinealoma	2	
Ependymoma	1	
Medulloblastoma	56	= 6 per cent.
Medullo-epithelioma	2	
Astroblastoma	3	
Tuberosclerosis	5	
Spongioblastoma multiforme	97	=11 per cent.
Neuroblastomas	4	
Meningeal fibroblastomas (endotheliomas, meningiomas)	123	=14 per cent.
Perineurial fibroblastomas of acoustic nerve	90	=10 per cent.

Pituitary adenomas and adeno-carcinomas	42
Craniobuccal pouch tumors	11
Dermoids and epidermoids	8
Granulomas	9
Blood vessel tumors	10
Metastatic—invasive from bones of skull	38
Sarcomas—primary in dura or brain	17
Papillomas of choroid plexus	2
Orbito-ethmoidal osteomas	2
Miscellaneous	16
Total	878

Tumors of the brain may be divided into different groups from several other points of view, i.e. with reference to the lobes of the brain which they involve, and with reference to their situation on the surface or within the substance of the brain.

A little more than one-third of the tumors were cortical and a little less than two-thirds were subcortical, as shown in the following table:

TABLE III

The Situation Of 878 *Tumors Of The Brain*

Cerebral in		64 per cent.
Predominantly frontal	19%	
Predominantly temporal	18%	
Predominantly parieto-occipital	13%	
Predominantly Rolandic	3%	
Predominantly on under surface of brain	11%	
Cerebellar in		34 per cent.
Multiple in		2 per cent.
Cortical in		39 per cent.
Subcortical in		61 per cent.

	Cortical %	Subcortical %	
Predominantly frontal.....	8	11	=19 per cent.
Predominantly temporal.....	4	14	=18 per cent.
Predominantly parieto-occipital.	3	10	=13 per cent.
Predominantly Rolandic.....	1	2	= 3 per cent.
Predominantly on under surface of brain.....	10	1	=11 per cent.
Cerebellar	12	22	=34 per cent.
Multiple	1	1	= 2 per cent.
Totals	39	61	100 per cent.

The large percentage of posterior fossa tumors is due to the frequency of cerebellar tumors in childhood, and the comparatively large percentage of growths on the under surface of the brain is due to the frequency of pituitary growths.

Slight and Early Symptoms of Tumors of the Brain

Little, if anything, need be said with reference to the classical symptoms produced by tumors of the brain. When all of the well-known disturbances are found to exist, the diagnosis is not difficult to make although the exact situation of the growth may be uncertain. However, one or all of the symptoms may be lacking: an individual may have an intracranial neoplasm of considerable size without headache, or vomiting or papilledema.

There was no history of headache in almost five per cent of our patients, and this absence of headache was noted especially often in the meningiomas underneath the frontal lobes and in pituitary tumors. Some children with cerebellar tumors never suffer from headache in spite of the fact that there are other signs of increased intracranial pressure, and this absence of headache was relatively frequent in children in whom the sutures of the skull had become separated so that a certain amount of relief of pressure had occurred.

Headache alone, or convulsive seizures or mental changes without any change in the fundi, may be the only symptoms of an intracranial expanding lesion. In the majority of pituitary tumors, and in many of the meningiomas which lie underneath the frontal lobes and attached to the dura on the floor of the anterior cranial fossa, papilledema is rare, and primary optic atrophy or defects in the visual fields are frequent. Likewise in individuals with a high degree of myopia, the fundus changes which we know as choking of the discs may not occur. But it is not sufficiently appreciated that papilledema may be wanting for a long time in patients who have large meningeal growths over the convexities of the brain, and in some with slowly growing gliomas in the cerebral hemispheres. The absence of papilledema is not positive evidence against the existence of an intracranial neoplasm.

It may not be superfluous to point out that papilledema is in most instances a *late* sign of tumor of the brain and that the effort should be made to make the diagnosis before papilledema has occurred. In our experiences with tumors of the brain, at the Neurological Institute, the diagnosis is being made more and more often before any fundus changes have taken place. Sometimes the decision that a patient had an intracranial neoplasm was reached from slight x-ray changes in the skull, from shifting of the calcified pineal gland, or from an area of calcification in the tumor. At other times, the deformity or dislocation of the ventricles found on the x-ray films after the injection of air by the lumbar route, has led to the conclusion that the patient had an intracranial growth. If time permitted other matters might be spoken of, but I shall mention some significant facts in connection with the demonstration of some lantern slides.

Even when the patient has been carefully studied in a hospital by those who are devoting themselves to diseases of the nervous system, the diagnosis of tumor of the brain, and the localization of the growth are sometimes difficult.

However, if all of the facts are carefully weighed, and if one will not hesitate to do an encephalogram or a ventriculogram—even though the symptoms of which the patient complains are slight and the neurological evidences of disturbed function inconsiderable, or the examination entirely negative, a correct conclusion can be reached in the majority of instances.

In our experiences at the Neurological Institute the following fact stands out prominently. If one does not hesitate to use encephalography or ventriculography, the diagnosis and localization of tumors of the brain can be made as often in the early stages of the disease in patients who have slight disturbances as in those in whom the symptoms and signs are marked and the disease far advanced. Unfortunately, up to the present time, most of the patients are first seen and referred to the surgeon when the disturbances that we call "classical" are already present. Fortunately, as the years are passing, an increasing number of patients have entered the hospital for study because they were advised to do so on account of slight disturbances. If this advice will be more frequently given, we can look forward with confidence to the time when many tumors of the brain will be recognized and subjected to operation early in the course of their development.

As I have mentioned, recourse must often be had to the injection of air into the cavities of the brain. Sometimes it is probable that the patient has a newgrowth but its exact situation is not certain; at other times the localization is definite but the nature of the disease—whether neoplastic or vascular or inflammatory—is doubtful. In order to illustrate how often the introduction of air is necessary, I have collected the data concerning two hundred successive cases, which are given in the following tables:

TABLE IV

Number of Cases in Which Ventriculography or Encephalography Was Necessary

Location of Tumor	Number of Cases	Number in Which Ventriculography or Encephalography was Done
Cerebral	149	52 = 34.9 per cent.
Cerebellar	51	8 = 15.6 per cent.
Totals	200	60 = 30 per cent.

TABLE V

The Diagnosis and Localization of 200 Intracranial Tumors

		Diagnosis of Tumor		Localization of Tumor	
Location of Tumor	Number of Cases	Made by clinical examination	Made by ventriculography or encephalography	Made by clinical examination	Made by ventriculography or encephalography
Cerebral	149	121	28	118	31
Cerebellar	51	46	5	43	8
Totals	200	167	33	161	39
		83.5%	16.6%	80.5%	19.5%

THE TREATMENT OF TUMORS OF THE BRAIN

In the large majority of instances, surgery is demanded, subsequent to which x-ray therapy may be given. The hope that in patients with intracranial tumors Roentgen therapy would often be beneficial, has not been realized, and we have been reluctantly led to the conclusion that x-ray treatment will often fail to inhibit growth. Some tumors are, however, radiosensitive and in them excellent results are obtained by radiotherapy. Among these may be mentioned the midline posterior fossa tumors now classified as medulloblastomas, which are so frequent in childhood, and tumors of the pituitary body. In the former, x-ray therapy should be given only after a suboccipital craniotomy has been performed, while in the latter, x-ray treatment should

precede operative interference. As has been demonstrated by many others, and by Dyke, Gross and Hare in the Neurological Institute, great improvement both in the visual disturbances and in the general symptoms will often follow Roentgen therapy of pituitary tumors. The x-ray is also useful in tumors of the skull which have secondarily invaded the cranial cavity.

Theoretically, and to some extent from actual experience, the x-ray or radium should have a marked effect upon the blood vessels and in that way should influence the growth of the gliomas. If the medulloblastomas are excepted, the influence of radiation upon the growth of the gliomas has not been striking, although it may well be that more intensive treatment than the Roentgen therapist dares to give might yield better results.

Little time can be devoted to the subject of the surgical therapy, and a report would have little value unless details were given of the results of surgery in different histological types of growths and of growths in various parts of the brain.

Through improved methods of diagnosis and advances in technique, the results of surgery of tumors of the brain have steadily improved. To appreciate that the progress has been marked, one has only to recall that a few decades ago, the immediate operative mortality was between fifty and ninety per cent, while in the hands of the modern neurosurgeon, the immediate operative mortality of all tumors is nearly ten per cent, and in some varieties of tumors is only one to two per cent. The improvement in the immediate operative results has been due to the following factors:

1. The use of local instead of general anesthesia. General anesthesia adds greatly to the dangers of operations for tumors of the brain. During the past few years, avertin anesthesia has been found to be of great value, and I am now doing most of the cranial operations under avertin anesthesia alone, or avertin plus local anesthesia.

2. The scrupulous *prevention* of bleeding during cranial operations. I am convinced that in operations for tumor of the brain, the results of different surgeons will vary in direct proportion to the care that is taken, not in the control of bleeding after it has occurred, but in the prevention of bleeding and in the degree of gentleness with which the delicate brain tissue is handled. Electrosurgical methods have contributed not a little to the prevention of bleeding during these operations, and with this aid, tumors previously irremovable, can now be radically extirpated.

3. The increasing frequency with which tumors of the brain are recognized and operated upon early in their course.

Aside from the immediate operative results, the larger question that concerns us is—what is accomplished for the patient by the surgical treatment of tumors of the brain? The following statements are justified:

The results of the surgical treatment of the meningiomas are excellent—a majority of the patients recover entirely. The operative results in the gliomas still leave much to be wished for. In the patients with slow growing tumors, vision can be saved and life may be prolonged for many years. In only a small proportion of the patients, however, can the tumor be radically removed. When the time comes, as it surely will, that the disease is recognized earlier and surgery done at an early stage, the number of patients who will be permanently relieved will be much larger.

In the rapidly growing and malignant gliomas, especially in the spongioblastoma multiforme, a cure is never effected. The tumors are always so large and have involved so much of the brain that their radical removal can never be accomplished and recurrences are the rule. By an extensive tumor removal, the patients may be relieved of all symptoms so that for one or for several years they can lead a life of comfort and usefulness, but the final fatal outcome is in-

evitable. The average length of life after surgical interference in the malignant gliomas is one to three years. The results in pituitary tumors, by a combination of surgical and x-ray therapy, have been greatly improved in recent years, the relief of general symptoms and the preservation of eyesight being satisfactorily accomplished in fully one-half of the patients.

The results of surgery in the acoustic nerve tumors are good; many of the patients may be relieved of all their symptoms for many years or for the remainder of their natural life.

Can we hope for better results in the future? Much will depend upon the stage at which the disease is recognized and treatment instituted, and if I have succeeded in calling to your attention some of the facts upon which early recognition of tumors of the brain will depend, the purpose of this paper will have been accomplished.

GASTRO-INTESTINAL MANIFESTATIONS OF ALLERGY*

ROBERT A. COOKE

Introduction: The ideas on the intestinal manifestation of allergy, as presented in this paper, have been gained largely from cases with such other sensitizations as asthma, hay fever, urticaria and angioneurotic edema, in which the abdominal allergy was either a part of such a clinical state and due to the same cause or was purely concomitant and due to a specifically unrelated cause. Careful consideration of this material has led me to believe that its presentation and explanation would be of interest to gastro-enterologists and might help them to a better understanding of the allergic nature of certain functional disturbances frequently observed.

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*Delivered before a Stated Meeting of the Academy, December 1, 1932.

In the acute allergies, especially well seen in infants sensitive to milk or egg, symptoms such as vomiting, abdominal pain and diarrhœa occur in association with edema of the lips, tongue and pharynx, general urticaria and perhaps asthma. In constitutional reactions following therapeutic injections, as for example, of pollen extracts, vomiting, abdominal distension, pain and diarrhœa may occur as evidences of the general allergic sensitiveness. Such observations bear witness to the fact that the gastro-intestinal tract is capable of allergic reactivity and may be involved in clinical disorders of this type.

The question then arises as to whether we may have clinical examples of allergy with symptoms so strictly or mainly abdominal that they would naturally come under the observation of the gastro-enterologist.

In order to answer this, we will undertake a discussion of the subject by considering:—

1st—Cases presenting symptoms of an acute surgical abdomen.
2nd—Cases presenting symptoms of so-called dyspepsia or indigestion.
3rd—Cases with symptoms of acute gastro-enteritis.
4th—Cases with symptoms of chronic diarrhœa and mucus colitis.

We will then attempt a brief exposition of the types of allergy and finally give some points that may be useful in arriving at a presumptive diagnosis.

1. The Acute Surgical Abdomen. The first case I will cite was reported by Janeway and Mosenthal in 1908 to the Association of American Physicians under the title, "An Unusual Paroxysmal Syndrome, Probably Allied to Recurrent Vomiting, with a Study of the N Metabolism," and was published in the Transactions of that year (p. 504). The diagnosis at that time was toxemia of endogenous origin. The essence of the history there recorded was as follows: A Jewish school-girl aged sixteen years suffered with recurring attacks which began, according to the

mother, when she was two weeks old. In early life the frequency was once a month and the longest period of freedom up to sixteen years was ten weeks. For a year attacks had come weekly and for three months every Friday with absolute periodicity. The attack was described by these authors as having a prodromal period of uneasiness, anorexia and epigastric or abdominal discomfort lasting from four to fourteen hours. Some very mild attacks did not go beyond this stage. Next there was a crescendo period with rapid increase of symptoms, prostration, anorexia, abdominal colic, and also pain referred to shoulders, hips or feet. There was fever, tachycardia and polynuclear leucocytosis. Maximum temperature, 104°; pulse, 140; leucocytes, 28,800. The only differential count recorded when leucocytes were 8,000 showed normal eosinophile count. Occasionally there was headache. The abdomen was rigid, with tenderness at times as extreme as in general peritonitis but varying in the location of maximum sensitiveness, which was usually to one side or the other of the umbilicus. Marked salivation was noted and in severe attacks there was constant nausea and belching and occasional vomiting, the vomitus containing free HCl. This stage lasted from eight to sixteen hours and was followed by the period of recovery with rapid subsidence of pain, then fever and leucocytosis within seventeen hours. She then felt well, had a voracious appetite and within a few days regained the four or five pounds lost in the attack. Gastric analysis showed slight hyperchlorhydria. This case was referred to me in 1916 by Dr. Halpert of Scranton who had originally referred her to Dr. Janeway. The subsequent history was that under later observation by Janeway at Johns Hopkins Hospital an exploratory operation had been done and the appendix removed. It was without effect. The severe attacks continued on the average of twice a month but the milder attacks were more frequent. In spite of this her nutrition remained good. Viewing this case at that time (1916) as a possible manifestation of allergy, the intradermal skin tests were done with such ordinary foodstuffs as milk, egg, cereals, meats and the

important vegetables and fruits. All tests were negative. The family history for allergy was negative. However with the hypothesis that this was allergy and probably an allergy to food, it was a logical conception to exclude at first those foods most commonly taken by a person from infancy to the age of twenty-four, hence milk, eggs and meats were eliminated. The attacks stopped. Milk was subsequently added to the diet on two separate occasions and the well-recognized prodromal symptoms appeared at the end of two or three days. After these two experiences the patient could not again be induced to take milk. When last seen in 1925 she had been free of all attacks. She never touched milk and was not then willing to repeat the experiment. Her two children showed no allergy up to that time. The sudden cessation of attacks of twenty-four years' duration by the withdrawal of milk, and the reproduction of mild attacks on two occasions by the use of milk seem to warrant the diagnosis of an allergy of a type that I will later attempt to explain.

The second case presents even more acute evidences of a possible surgical condition. Mrs. C. B., now sixty-four years old, has no antecedent history of allergy. Her daughter has a condition similar to the one about to be described, but much milder. At about twenty-five years of age she realized that fatty fish gave indigestion with fullness and belching. At the age of forty she began to have frequent severe abdominal attacks which she herself traced to the use of pork fat. Small amounts of lean pork may be eaten without trouble. Fats other than lard in quantity will give headache and dizziness. A typical attack from lard is described as follows: About two to three hours after the fat is eaten the attack begins with abdominal distress which progresses rapidly to pain so severe that she passes into shock. The vomiting is continuous and explosive; pulse rapid; skin pale, cold and clammy. Distension of the abdomen is extreme. Formerly the attack lasted twelve hours. Due to greater care, or loss of sensitivity, the recent attacks have been infrequent and mild. There is no fever. Blood counts have not been made. Tests

with lard by the patch and scratch methods show no evidence of skin sensitiveness. Two years ago this patient had a gallstone attack. There was sudden colicky pain for about half an hour every two or three hours. The entire attack lasted twelve hours and was finally relieved by morphine and atropin. The temperature was 101°. There was rigidity of the right upper quadrant and the gall bladder was palpable for several days. Jaundice was not deep but the stools were clay-colored. The extreme distension, vomiting and collapse symptoms were absent. The patient states that there was a marked difference between this illness and the attacks due to lard.

These two cases represent what at the present time we are wont to regard as angioneurotic edema of the abdominal type. In making a differential diagnosis between this and such surgical conditions as volvulus, strangulated hernia, mesenteric thrombosis or peritonitis, one cannot depend upon temperature or leucocyte count or local abdominal signs. Attention is called to the necessity of discovering any extra-abdominal signs and symptoms such as pain in the extremities (shoulders, hips and feet), headache, salivation and of course the history of repeated attacks, together with other allergies as urticaria and visible angioneurotic edema.

Whether edema of the intestinal wall is a strictly correct conception of the functional pathology is, I believe, a question that cannot be answered. Surgeons who have operated on certain of these cases during an attack report no evident lesion. Adrenalin injections do not give relief, but neither does adrenalin influence the external and visible manifestations of angioneurotic edema to an appreciable extent. Heretofore, we have very largely overlooked the possibility of interpreting these and similar symptoms of intestinal and gastric dysfunction as the result of a disturbance of the sympathetic or parasympathetic divisions of the autonomic system. How such disturbance is created we do not know, for there is no recognized allergy of nerve tissue, but there is no difficulty in conceiving of an edema

indirectly involving the nerves, plexuses or endings and analogous with the cases of cerebral angioneurotic edema.

2. Dyspepsia. Perhaps the most frequent symptom-complex of interest to the gastro-enterologist is that embraced by the term "dyspepsia," in which few or many of the symptoms of pyrosis, eructation, flatulence, hyperacidity, anorexia, fullness after eating, nausea or vomiting are present. To be sure these symptoms may be reflex and due to organic lesions of the appendix, gall bladder or the stomach (ulcer), but in many instances after careful examination they are rightfully attributed to functional disturbances only, and it is to these latter cases we refer.

It is a common experience in taking the histories of cases with asthma and hay fever to elicit also the statement that the patient suffers with indigestion. The gastric symptoms may coincide with the other allergies but more commonly they are unrelated phenomena. The histories of these cases are interesting in that they fall into two groups: First there are those patients who can state that a specific food produces the symptoms of dyspepsia. When eaten the symptoms are quite immediate—within fifteen or twenty minutes. They always occur with great regularity and when tested the skin reaction is quite uniformly positive and confirmatory. The immediateness of the symptoms enables a patient to make the correct diagnosis. These attacks are paroxysmal, abrupt and vary in severity. When such conditions are mild the patients do not consult a physician. They abstain from the offending article. In the second group the symptoms of indigestion are more chronic and more troublesome because the patient cannot relate the trouble to any particular food. I recall one patient, a woman of twenty-five, who in addition to mild urticaria, complained of pyrosis, eructation, fullness and anorexia of six months' duration. The tests in this case were negative. By restrictive diets it was finally determined that the trouble was due to fish taken twice a week. Elimination of fish produced a cessation of both urticaria and dypepsia. When eating fish the symptoms would not

return for several weeks. This case represents the delayed, not the immediate, clinical reaction, hence cause and effect are not obvious to the patient, and where the clinical reaction is delayed, the skin test is always negative. Such cases usually have a threshold of tolerance, and this adds greatly to the difficulty of diagnosis. In this group of delayed allergies with chronic dyspepsia a large number are associated with asthma secondary to sinus infection. The frequency of symptoms of indigestion in association with asthma is well recognized and in this particular group of infective asthma the incidence of associated "dyspepsia" is as high as 30 per cent. One indication that the digestive disorder may be considered as allergy lies in the fact that the proper clearing of infection, where such is possible, produces a cessation of the gastric as well as the bronchial manifestations. This brings up the question of bacterial allergy, which can and does exist and in which gastro-intestinal symptoms may play either a minor part in the allergic symptom-complex or they may dominate the picture. Since it is true that sinus disease may produce both asthma with dyspepsia and asthma without dyspepsia or urticaria or angioneurotic edema without asthma, I believe that the hypothesis is plausible that indigestion without other allergies may be the result of a bacterial allergy, hence consideration must be given to focal infection acting allergically to cause such functional disturbances.

3. Acute Gastro-enteritis. Acute gastro-enteritis with nausea, vomiting and severe diarrhœa may be due to ingested substances, either foods or drugs, and reference is not made here to the ptomaine poisoning from tainted foods. When the onset of symptoms is immediate, that is within an hour of eating, the patient is usually aware of the cause or soon becomes so after several attacks. I recall one instance in which beer was the cause. In such cases skin tests are positive. But in patients with symptoms just as acute in which the interval is longer—a delayed reaction of from four to twelve hours—the patient's diagnosis is less apt to be correct and the difficulty to the physician is greater, for the skin tests will be negative.

When attacks are infrequent and due to some food rarely taken, such as clams, a presumptive diagnosis is easy, and if the patient acquiesces it can be verified by clinical test. But when due to some food commonly taken in which the threshold of tolerance is reasonably great, the clinical procedure of restrictive diets must be resorted to.

4. Chronic Diarrhœa. Mucus Colitis. I have seen a number of cases, usually in connection with other allergies, in which symptoms are never acute and severe but in which either a persistent diarrhœa or symptoms of a so-called mucus colitis were present. In these cases symptoms disappear quite promptly upon avoidance of the specific food. Milk and egg have been found to be the most frequent causative factors. The skin tests are usually negative, for the clinical reaction is delayed. In children particularly, and here again my observations have been in those with an associated allergy, we see a symptom complex not directly related to asthma in which there is marked anorexia, abdominal discomfort rather than pain, with listlessness and fatigueability, with marked evidences of under-nutrition and with looseness of the bowels often alternating with constipation, but with excessive mucus in the stool. I recall a case of asthma due to rabbit dander, in which the symptoms just mentioned were very prominent. The removal of milk from the diet produced a really impressive change in the child's condition with a gain of nearly eight pounds in six months. Such cases are, I believe, analogous to the first case I cited, formerly reported by Janeway, but never so severe, the symptoms being limited to those of the prodromal stage of that case.

We cannot go deeply into an explanation of Allergy but I will briefly sketch our conception of the reactions as they pertain to the cases referred to. In allergy we have many different reactions: Some may be induced artificially and are physiological, as serum disease; some cannot be induced and are natural or spontaneous, as asthma, and rest upon an hereditary or constitutional basis. Pathologically, the reaction may be one of hyperemia, edema, exudation or

inflammation. The clinical symptoms are varied and depend upon the tissue involved in the hypersensitive reaction. Immunologically, the reactions may be immediate or delayed and this point I wish to emphasize, for the usual conception of the allergist is that his function is solely to perform skin tests for diagnosis. As evidenced by the cases cited, this is not so. Many cases of true allergy are not skin sensitive. In hay fever we have allergy in which the clinical symptoms are immediate, that is, they occur within fifteen to sixty minutes of contact. In practically all such cases the skin test is positive. Bear in mind that the positive skin test is itself an immediate reaction and therefore will indicate only the immediate type of clinical reaction. On the other hand, when the clinical symptom is delayed the skin test is negative. In the immediate reactions we find demonstrable antibody in the skin and blood, but in the delayed reaction antibody is not found. In the former case we are testing with the substance for which there is specific antibody. In the latter case we can only assume that the real allergen is some chemical derivative of the apparent allergen and is produced and elaborated within the body hours after it has been introduced. If, for example, in our cases of delayed reaction to milk, it could be determined what this elaborated fraction of milk is, then it is conceivable that the skin test might be positive. But such knowledge still lies beyond our grasp.

Diagnosis. In the matter of diagnosis, then, certain points may be cited that will aid in an assumption of clinical allergy. Since allergy is in many cases a constitutional disorder based upon hereditary influences a careful family history for allergy in the antecedents, both direct and collateral and also in brothers and sisters or even in children, is of value. Of greater importance is the history of other allergies, either past or present, in the patient.

Skin tests should be done in suspected cases for they may give a definite diagnosis, but I have already pointed out and again emphasize the fact that negative skin tests

do not exclude allergy, for positive reactions are not found in those cases with the delayed clinical reaction. In some, eosinophilia is present.

One striking peculiarity of clinical allergy is the frequent repetition of attacks or its distressing chronicity. This is evidenced in practically all the cases cited. Though usually not serious from the standpoint of mortality, allergy may form a serious problem for patient and physician alike unless the cause can be ascertained and removed.

Let us now answer concretely, and I hope in not too unsatisfactory a way, the question asked at the beginning of this paper by saying that gastro-intestinal symptoms do occur as the result of allergies frequently, in my experience, in connection with other allergies, but not necessarily so. The cutaneous tests may help in the diagnosis in a certain percentage of these cases, but to my mind what is even more important is a careful clinical study with the allergic viewpoint in mind.

SIMPLE ACHLORHYDRIC ANEMIA*

NATHAN ROSENTHAL
AND
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General Considerations:

In recent years, many articles have been published concerning a type of idiopathic microcytic anemia which has been given various names. The simple achlorhydric anemia of Witts (1), Davies (2), Hare (3), Hurst (4), and Haden (5), the cryptogenic achylic chloranemia of Kaznelson, Reimann and Weiner (6), the primary hypochromic anemia of Dameshek (7), and Waugh (8), the idiopathic hypochromemia of Mills (9), the idiopathic secondary anemia of Watkins (10), the simple achylic anemia

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of Meulengracht (11), and the chronic chlorosis of Adamson and Smith (12), all belong to the same clinical syndrome.

Although the association of achlorhydria and pernicious anemia was known for many years previously, Einhorn (13), in 1903, reported 15 cases of gastric anacidity in three of which simple anemia was present. Priority, however, should be credited to Faber (14) for describing the complete clinical picture of simple achlorhydric anemia. Of 112 cases of achylia gastrica reported in 1909, he found 20 cases with secondary anemia of the type under consideration. In 1913 a further communication by Faber (15) reported 207 cases of achylia with 23 simple anemias.

Weinberg (16), in 1920, studied 77 cases of constitutional achylia and found 15 cases (19 per cent) associated with secondary anemia. Faber and Gram (17), in 1924, described an additional 90 cases of achylia with 41 per cent simple anemias.

Weiner and Kaznelson (18), in 1926, reported the first descriptions of bone-marrow sections made at biopsies in these cases. These findings have been substantiated by Witts (1) and Dameshek (7).

The disease is a hypochromic microcytic type of anemia, occurring predominantly in middle-aged women, and usually associated with an achlorhydria or possibly an hypochlorhydria. Its etiology is obscure. Its course is protracted with a tendency to remissions and exacerbations. Excellent results in its treatment have been reported from the use of adequate doses of inorganic iron preparations.

In a survey of all patients with anemia, from whatever cause, examined during the past 5 years, the authors have been able to classify 43 cases as simple achlorhydric anemia. Of these patients 6 developed anemia after gastric surgery, 5 having had partial gastrectomies and the other, a physiological total gastrectomy for carcinoma of stomach. Lues was found as an associated condition in 6 cases.

During the same period a large number of other cases of hypochromic anemia was studied. These differed from the above-mentioned syndrome with respect to age, sex, and the constant presence of hydrochloric acid in the gastric contents. These anemias correspond to chlorosis. There is no doubt that the majority of these also have an associated iron deficiency but in addition some nutritional disturbance as well. Although some patients may present the chronic course of the achlorhydric group, the anemia usually does not recur after treatment particularly in children and young individuals. Such cases will be discussed in more detail in a subsequent communication.

In all the patients, gastric analyses were made by the Rehfuss fractional determination, and the majority of those who showed anacidity were re-examined, using histamine and neutral red. In a small minority of the achlorhydrics there was an absence of pepsin and rennin as well.

Typical blood changes in some of the cases are presented in the table. The normal blood picture and also that of pernicious anemia are included for comparison.

Incidence:

The sex of the patients was predominantly female (80 per cent), only 20 per cent having been males.

Most of the patients were in the fourth and fifth decades of life, the youngest being 20 years of age and the oldest 65.

No particular race or nationality showed any special predisposition; nor did any occupation appear to bear a causal relationship.

Etiology and Pathogenesis:

The underlying cause of simple achlorhydric anemia depends upon a number of factors, viz.: (1) an achlorhydric constitution or the so-called chronic abdominal invalid of Witts (19); (2) iron deficiency; (3) nutritional disturbances; (4) associated complicating conditions.

There is no doubt that the close association of achlorhydria with iron deficiency etiologically segregates the so-called achylic type from other disturbances, and that associated complicating conditions are of slighter consequence in the pathogenesis of this particular group. In the normochlorhydric group (or chlorosis) such complications are possibly more important, causing a greater iron demand and, therefore, producing an iron deficiency.

The more recent opinions regarding the pathogenesis of achlorhydric anemia would seem to incline to an iron deficiency, either as to intake or assimilation. In clinical experiments on achlorhydric patients with anemia Mettier and Minot (20) showed that iron is absorbed best when the reaction of the duodenum and jejunum is acid, and that large doses are necessary for optimal response.

Heath, Strauss and Castle (21) conclude that, "a simple explanation is offered for the effectiveness of iron therapy in certain types of hypochromic anemia, namely, that these types of anemia are due to a deficiency chiefly of iron, preventing adequate hemoglobin formation."

A similar view is expressed by Dameshek (7) who believes that inadequate gastric digestion of iron may lead to faulty hemoglobin synthesis, and thus results in improper maturation of the immature red elements of the bone-marrow.

Davies (2) is of the opinion that iron deficiency arises in achlorhydrics from the ingestion over long periods of concentrated foods because of post prandial discomfort which occurs after the intake of protein foods and vegetables.

In discussing the cases of hypochromic anemia in pregnancy, Strauss (22) and Strauss and Castle (23) conclude that the added demands for hemoglobin during gestation result in an iron deficiency conditioned by gastric anacidity or low acidity.

Witts (1) associates the development of this anemia

with the stress of the reproductive era in women who have some inherent inadequacy of the blood forming system, particularly in the synthesis of hemoglobin. In the induced achlorhydria of gastrectomized patients he believes diet, deficient in iron content, together with poor iron assimilation are important factors in the development of the anemia.

Bloomfield (24) is likewise inclined to believe that because of the predominance of this anemia in females, it is in some way linked to the menstrual function in individuals who have some erythropoetic deficiency, either primary or secondary to faulty diet.

It has been held by some that achlorhydric anemia is closely allied to pernicious anemia. Davies (2) and Zadek (25) describe an intermediate group which falls between these two extremes and which responds to both liver and iron. Gram (26) has reported a family traced through three generations in which pernicious anemia or achlorhydric anemia occurs in different members of the same family. One case was followed from its inception as a hypochromic anemia to a fully developed pernicious anemia. Dameshek (7) believes hypochromic anemia is related in some way to pernicious anemia, of which it may be an abnormal type.

The artificial production of achlorhydria through partial or total gastrectomy may throw additional light on the etiology of hypochromic anemia. Only 5 per cent of our series of 50 cases of subtotal gastrectomy including one total gastrectomy (who has been followed 2 years) developed anemia. These have been hypochromic in type, and in no case has pernicious anemia been observed.

Achlorhydric anemia, therefore, may be regarded as a disturbance of iron metabolism which occurs chiefly in women during the period of sexual maturity.

Symptomatology:

These are variable but patients usually seek aid because of the symptoms arising from the anemia, viz.: weak-

ness, palpitation, dyspnea, and, occasionally, edema of the extremities. Less commonly, soreness of the tongue, paræsthesias, or menorrhagia are the chief complaints. At times gastric disturbances—such as anorexia, nausea, epigastric distress and diarrhea are the chief complaints. Most of the patients regard their illness as of long duration.

The patients present marked evidences of anemia. The color of the skin is somewhat yellowish or waxy. Haden (5) emphasized the importance of the blue sclerae observed in such cases in contradistinction to the yellow sclerae in pernicious anemia. In the more severe cases, hemoglobin below 40 per cent, enlargement of the area of cardiac dullness may be found, and usually an associated hemic murmur is heard. A sub-febrile temperature, so-called anemic fever, may likewise be observed. In some instances the temperature may be considerably increased—as high as 103° to 104°. Atrophy of the papillae of the tongue is occasionally present. Palpable liver and spleen are observed less constantly. Loss in weight occurs in a considerable number of cases. In the hypochromic cases, an unusual finding is the brittleness of the nails, and even koilonychia or spoon nails, which are frequently noticed by the patients themselves.

The combination of fever and a cardiac murmur in one patient with hemoglobin of 18 per cent led to the diagnosis of subacute bacterial endocarditis. Marked improvement occurred with iron medication. With the improvement of the blood status, the fever and cardiac signs disappeared.

Hematological Findings:

The blood picture (See Table) is characterized by severe or moderately severe secondary anemia associated with low color index (usually 0.5 or below). The proportionate reduction of the hemoglobin is therefore greater than of the red cells. The lowest hemoglobin was 18 per cent with red cell count of 1,830,000. The color index varied from 0.5 to 0.7.

Case No.	Name	Sex	Age	Associated condition	Hemoglobin %	Red blood cells	White blood cells	Platelets
1.	M.M	F	38	Nasal polypi	32	3,650,000	6,600	300,000
2.	L.S.	F	42	None	36	4,000,000	6,900	220,000
3.	R.S.	F	70	None	40	5,010,000	8,400	330,000
4.	R.K.	F	54	None	63	4,400,000	6,400	230,000
5.	E.R.	F	45	None	30	3,420,000	6,450	100,000
6.	N.R.	F	44	None	24	2,600,000	8,100	250,000
7.	M.B.	F	17	None	54	4,600,000	7,800	400,000
8.	G.S.	F	46	Menorrhagia	45	4,200,000	6,000	360,000
9.	M.C.	F	24	Uncinariasis	38	2,970,000	5,900	250,000
10.	A.B.	F	23	Lues	18	1,830,000	3,200	130,000
11.	Y.Z.	F	48	Lues	26	2,560,000	8,000	550,000
12.	A.P.	M	64	Lues; Gastric ulcer	32	1,850,000	8,500	220,000
13.	R.G.	M	51	Gastric carcinoma; Total gastrectomy	66	4,200,000	5,100	260,000
14.	R.L.	F	47	Gastric ulcer; Partial gastrectomy	64	5,270,000	5,400	145,000
15.	B.G.	M	35	Gastric ulcer; Partial gastrectomy	50	4,350,000	8,000	280,000
16.	B.S.	M	26	Normal	90	4,850,000	9,250	400,000
17.	B.B.	M	34	Normal	97	5,600,000	7,400	310,000
18.	C.S.	F	45	Normal	93	5,050,000	8,600	380,000
19.	C.B.	M	54	Pernicious Anemia	60	2,100,000	7,000	100,000

Polymorphonuclears				Lympho-	Mono-	Volume	Volume	Color	Mean
nonseg- mented	seg- mented	eosino- phil	baso- phil	cytes	cytes	packed red cells c.c. per 100 c.c.	% of normal	index	diameter or red blood cells in micra
%	%	%	%	%	%				
2	57	3	1	37	0	19	0.41	0.44	6.0
8	51	0	0	32	9	23	0.50	0.45	6.2
2	64	2	1	22	9	25	0.54	0.4	5.9
3	51	1	1	36	8	33	0.72	0.7	6.3
4	61	1	0	26	8	19	0.41	0.45	5.8
8	58	0	0	28	6	22	0.49	0.5	5.8
2	64	1	0	30	3	30	0.65	0.6	6.0
0	49	3	0	44	4	23	0.50	0.5	6.0
14	59	6	0	16	5	25	0.54	0.7	6.55
13	63	1	0	15	8	16	0.35	0.5	6.3
3	47	4	0	38	8	15	0.33	0.52	6.25
9	81	3	0	3	4	20	0.48	0.89	7.2
2	60	3	1	27	7	35	0.76	0.78	7.0
4	50	2	0	36	8	32	0.69	0.61	6.3
2	64	1	0	31	2	32	0.69	0.58	6.24
9	63	2	0	25	1	44	0.95	0.9	7.4
5	56	2	0	33	4	46	1.0	0.87	7.5
2	60	2	0	30	6	45	0.97	0.93	7.4
1	60	2	0	34	3	26	0.56	1.5	8.1

Although the hemoglobin, red cell count and color index are indicative of the type of anemia, other important findings are of value. The average diameter of red cells determined by the method of Price-Jones (27) (Chart 1) is usually well below 7.0 micra, and the mean diameter varies between 5.5 micra and 6.5 micra. Diameter of the red cells in other types of hypochromic anemia (i.e., with free hydrochloric acid) and in this variety of anemia associated with lues, shows a tendency to larger sized red cells (See Table). In the former, they may reach a mean diameter of 7.0 micra, and in the latter the diameter was as high as 7.2 micra.

This diminution in the size of the red blood-cells (Figs. 1 and 2) is accompanied by a proportionate diminution in average relative cell volume. The normal volume of the packed red cells is 46 c.c. per 100 c.c. of blood. The volume of red cells in this type of anemia is considerably diminished

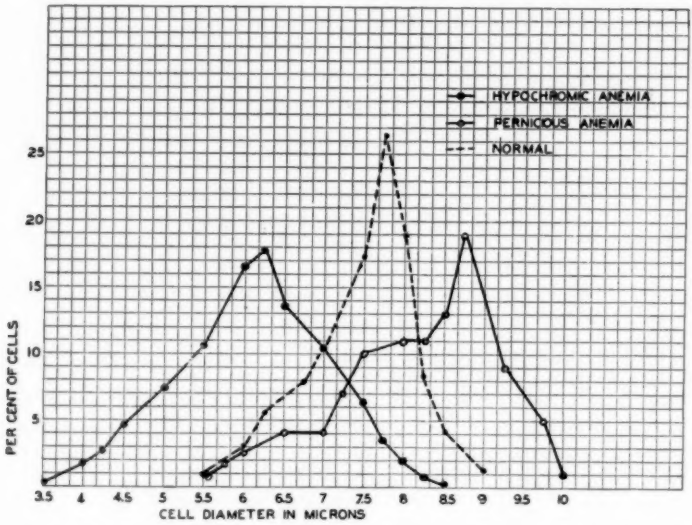

Chart 1. Price-Jones Curves in Simple Achlorhydric Anemia Compared with Pernicious Anemia and the Normal Curve. The Mean Diameter of Red Cells—Simple Achlorhydric Anemia 6.0, Normal 7.5, Pernicious An-

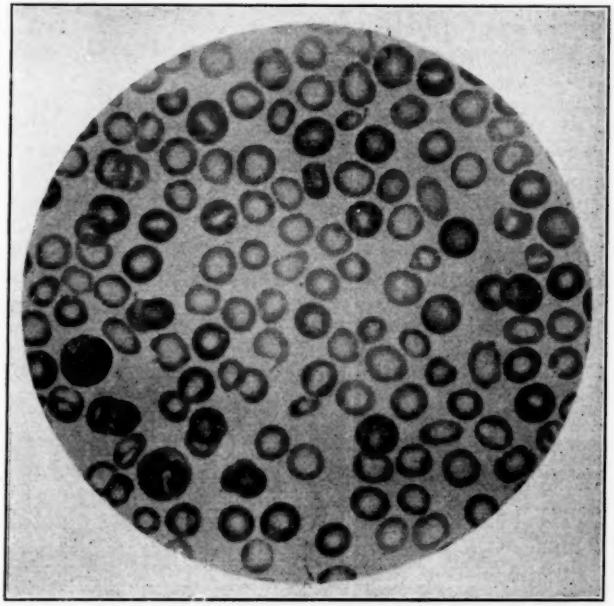

Fig. 1. Blood Smear in Simple Achlorhydric Anemia (Luetic) Following Blood Transfusion. Note the Microcytosis in Comparison with the Normal Transfused Cells. (X 1000).

(See Table). In the author's series, variation from 19 c.c. to 37 c.c. occurred, or in relation to the average normal volume from 41 per cent to 81 per cent. Similarly, there is also a diminution of the mean corpuscular volume (Wintrobe (28)), and of the volume index (Capps (29)).

This microcytosis of the red blood-cells is well demonstrated after blood transfusions (Fig. 1), or by superimposing the blood smear from an hypochromic anemia on that from a normal patient.

In the blood smear, the red cells are found to be definitely hypochromatic (Fig. 2). There is marked increase in size of the central pale area, so that the hemoglobin is concentrated or piled up at the periphery in most of the small

red cells (anachromasia). Few cells appear normal (orthochromasia). In the very severe anemias, marked poikilocytosis occurs.

The reticulocytes are either normal or absent. The fragility of the red cells is usually normal. Occasionally, an increase of the minimal fragility may occur especially after pregnancy and in the rare type with dysphagia (Vinson Plummer syndrome, 30).

The number of white blood-cells is either normal or considerably diminished. The differential blood picture of the leucocytes is usually normal. Occasionally, a slight eosinophilia is found. The size of the polymorphonuclear cells is normal in contradistinction to their increase in size in pernicious anemia.

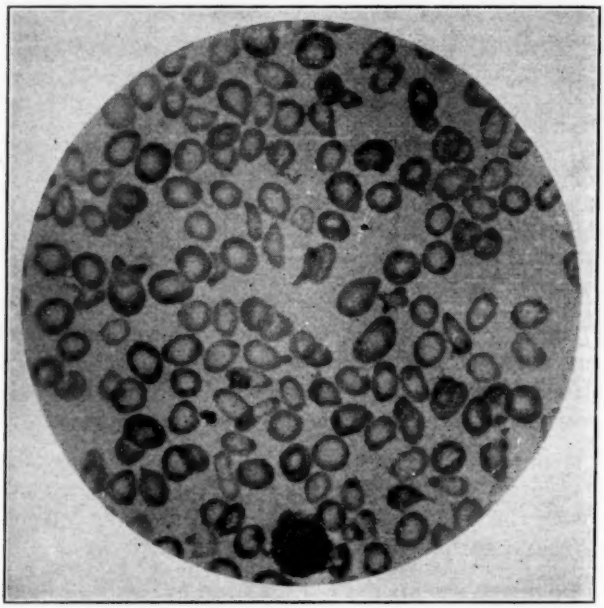

Fig. 2. Blood Smear. Achlorhydric Anemia. Anisocytosis, Poikilocytosis Generalized Microcytosis, and Anachromasia (Hemoglobin 32 Per Cent). (X 1000).

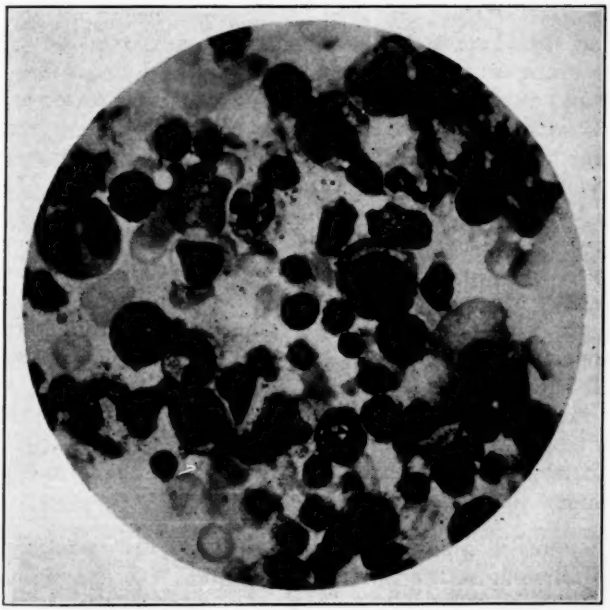

Fig. 3. Smear of Bone-Marrow. Note Numerous Normoblasts, Few Megaloblasts and Mitotic Megaloblasts. Premature and Mature Granulocytes Present. (X 1000).

The blood-platelets may be reduced, normal or slightly increased. Occasionally, in the more profoundly anemic cases, they are markedly reduced (as low as 100,000). The morphology of the platelets is normal.

Bone-Marrow:

An erythroblastic (normoblastic) reaction is characteristic (Fig. 3). This occurs not only in the achlorhydric group, but in the hypochlorhydric and normochlorhydric type. In one case of achlorhydric anemia associated with lues, in which treatment with iron as well as transfusions was unsuccessful, a normo-erythroblastic hyperplasia was found. An unusual finding in this case was also a simple gastric ulcer associated with achlorhydria.

Association with other Conditions:

The occurrence of hemorrhoids, menorrhagia, organic (not malignant) gastric or intestinal lesions, is not infrequent in other disorders. Their presence, however, in cases with achlorhydria, hypochlorhydria, and at times, normochlorhydria, may be a predisposing factor in the early development of the anemia. In fact, some of the well-defined cases of hypochromic anemia have been admitted to the hospital for other conditions. This is well illustrated in one of our recent cases, first seen by a laryngologist for nasal polypi. On admission to the hospital, it was noticed that the patient had an intense pallor and examination of the blood revealed typical hypochromic anemia (hemoglobin 32 per cent, red cells 3,650,000), with complete achlorhydria. With iron treatment, the hemoglobin rose to 67 per cent in four weeks, when the patient had a large number of polypi removed without undue hemorrhage.

In another instance, the patient was first seen by an ophthalmologist for partial amblyopia. On examination, it was observed that the vessels were paler on the disc than they were peripherally, a usual finding in patients with a hemoglobin below 30 per cent. This was confirmed by blood studies of the case (hemoglobin 26 per cent, red cells 2,980,000). After several weeks of iron therapy the eyesight improved with the rise in hemoglobin to 72 per cent.

The presence of any of the following associated conditions may induce or aggravate the severe anemia: (1) menorrhagia; (2) hemorrhoids; (3) pregnancy; (4) lues; (5) intestinal infestation; (6) nasal polypi; (7) hyperthyroidism or hypothyroidism; (8) gastric or duodenal ulcer; (9) improper diet.

The anemia may subside in some cases without particular attention to these complications. In others, however, improvement does not occur until such factors are specifically treated. Rhoads and Castle (31) observed frequent

associations of achlorhydric anemia and ankylostomiasis which improved rapidly on iron medication. Cases in which the hook-worm is eradicated recover rather slowly unless iron is adminstered. In one of our cases resistant to treatment on account of metrorrhagia, no response to iron was obtained until an hysterectomy had been performed.

Prognosis:

The prognosis in hypochromic anemia, with respect to life is favorable. The syndrome, however, runs a chronic course, and, unless therapy is continued indefinitely, the patient will experience exacerbations of symptoms.

Treatment:

The only successful therapeutic agent available is inorganic iron. Attempts have been made to treat this type of anemia with ventriculin, liver, liver extract, and fetal liver, but have resulted in failure. Our most consistent results have been obtained from the use of iron in dosage of at least ten grains three times a day. Iron ammonium citrate, saccharated carbonate of iron, reduced iron, and Blaud's pills have been used with equally favorable results in the dosage indicated. After a week or two on any one of these preparations, the hemoglobin begins to increase and the patients feel and appear better. The reticulocyte count rises, but not to the same degree as after beginning liver therapy in pernicious anemia. On an average, 3 to 8 reticulated cells per hundred erythrocytes can be counted. With respect to the use of copper in addition to the iron, the authors have not found recovery to be any more rapid when added.

In addition to this specific therapeusis, most of our patients are given hydrochloric acid and pepsin. They are placed on a well-balanced, full diet in the hospital, and are urged to continue this diet when they return home. Curiously enough, once improvement has begun, the patient has little or no difficulty in assimilating meats and vegetables, whereas previously these were not tolerated, the diet having been limited to bread and cereals.

The use of iron should be continued almost indefinitely. In analyzing the results, it has been found that steady improvement may be expected while patients are under direct supervision in the hospital. As soon as they are transferred to the Out-Patient Department, there is less tendency to improve. This may be due to (1) laxity in continuing medication, and (2) economic stress, i.e., inability to secure the adequate diet which should complement the iron.

A certain number of cases seem to be resistant to iron, no matter how large an amount is given. These do not seem to respond to any form of therapy now in use, most of them having either neglected their symptoms for years, or having gone through many cycles of remission and exacerbation.

Alterations in the Blood Picture During Treatment:

As iron is almost a specific, continued observation of the blood changes is of great interest. The hemoglobin increases rapidly to almost normal, or slightly below. This increase is much greater than the proportionate increase in the red cells. The red blood-cells increase to the normal number and in some instances may rise to above 6,000,000. The morphology of the red cells shows changes from the beginning. Poikilocytosis soon disappears, anachromasia gives way to the normal or orthochromatic red cells. The color index tends to return to normal. The reticulocytes which are normal at first increase slightly (3 per cent to 8 per cent) within a week.

The size of the red blood-cells shows a tendency to slow recovery to the normal. The microcytosis apparently persists much longer than the other changes.

The volume of packed red cells conforms to the improvement in the clinical condition. As the hemoglobin increases with and without a corresponding increase in red blood-cells, the volume percentage as well as the relative cell volume gradually return to normal. The volume index and mean corpuscular volume also tend to return to normal.

Summary:

1. Simple achlorhydric anemia is a syndrome which occurs most frequently in middle-aged women.

2. The anemia is characterized by microcytosis and low color index.

3. Iron deficiency is probably the underlying factor in the development of the anemia.

4. Certain conditions may be contributory to the development or aggravation of the anemia, such as, uterine hemorrhage, hemorrhoids, intestinal infestations, and nutritional disturbances.

5. Adequate doses of inorganic iron (reduced iron—thirty grains daily) usually act as a specific.

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RESOLUTIONS ADOPTED AT A MEETING OF THE COUNCIL HELD DECEMBER 28, 1933

Death of Dr. William Sydney Thayer

RESOLVED, that the Council of The New York Academy of Medicine desires to record upon its minutes its deep sense of loss in the death of Dr. William Sydney Thayer, an Honorary Fellow of this institution. Dr. Thayer was a skillful physician, a brilliant teacher and a cultured gentleman whose high-minded principles, attractive personality and sterling character brought to him the affection of his patients, the admiration of his students and the highest regard of his professional colleagues which he richly deserved.

American Students in Foreign Medical Schools

RESOLVED, that the Council of The New York Academy of Medicine learns with great satisfaction that the Council on Education and Hospitals of the American Medical Association, the Federation of State Medical Boards, the Association of American Medical Colleges and other organizations, have undertaken serious consideration of the problem of American students in foreign medical schools and desires to offer its cooperation in so far as it may to the end that a satisfactory solution be obtained.

Proposed Institute of Probation

RESOLVED, that the Council of The New York Academy of Medicine approves of the outline of lectures which have been prepared by the Court of General Sessions in the County of New York and wishes to express to the Court its congratulations on having made such an able beginning, and offers its hearty cooperation toward furthering the educational opportunities of those who are engaged in probational activities.

REVISION OF CONSTITUTION AND BY-LAWS

Resolutions Adopted at the Stated Meeting of January 5, 1933

Resolved, that the amendments to the Constitution and By-laws are hereby approved to take effect immediately and be it further

Resolved, that all Fellows elected prior to January 5, 1933 shall retain the title of Fellow, and be it further

Resolved, that all Associate Fellows elected prior to January 5, 1933, shall retain the title of Associate Fellow, and be it further

Resolved, that those Sections of the amended Constitution and By-laws adopted on January 5, 1933 which provide for the election of Members shall not apply to candidates for election to Fellowship or Associate Fellowship whose applications were received prior to that date.

The amended Constitutions and By-laws are being printed and will be distributed shortly.

RECENT ACCESSIONS TO THE LIBRARY

Association for Research in Nervous and Mental Disease. Infections of the central nervous system.
Balt., Williams, 1932, 563 p.

Bainbridge, W. S. Report on sixth International Congress of Military Medicine and Pharmacy . . . 1931.
[Menasha, Banta, 1932], 140 p.

Boeminghaus, H. and Zeiss, L. Die Erkrankungen der Harnorgane im Röntgenbild.
Leipzig, Barth, 1933 [1932], 232 p.

Bramwell, J. C. Heart disease; the principles of diagnosis and treatment.
London, Arnold, 1932, 244 p.

Cadwalader, W. B. Diseases of the spinal cord.
Balt., Williams, 1932, 204 p.

Calder, R. M. Bacteriology for nurses.
Phil., Saunders, 1932, 285 p.

Crossen, H. S. and Crossen, R. J. Synopsis of gynecology.
St. Louis, Mosby, 1932, 227 p.

De Kruif, P. H. Men against death.
N. Y., Harcourt, [1932], 363 p.

Doll, E. A.; Phelps, W. M. & Melcher, R. T. Mental deficiency due to birth injuries.
N. Y., Macmillan, 1932, 289 p.

Ducuing, J. Précis de cancérologie.
Paris, Masson, 1932, 1259 p.

Duhot, E. L. L. Les névrites par ischémie.
Paris, Maloine, 1932, 173 p.

Fishbein, M. Fads and quackery in healing.
N. Y., Covici, 1932, 384 p.

Flurin, H. and Vialle, J. L'oto-rhino-laryngologie thermale & climatique.
Paris, Expansion Scientifique Française, 1931, 310 p.

Fraser, (Mrs.) A. R. (Robson). The teaching of healthcraft to African women.
London, Longmans, 1932, 134 p.

Gál, F. Physikalische Therapie der Frauenkrankheiten.
Berlin, Urban, 1932, 236 p.

Goiffon, R. Exploration clinique de l'équilibre acide-base par l'analyse d'urine.
Paris, Masson, 1932, 101 p.

Greve, H. C. and Paschke, H. Einführung in die Zahnersatzkunde.
Stuttgart, Enke, 1932, 116 p.

Herxheimer, H. Grundriss der Sportmedizin.
Leipzig, Thieme, 1933 [1932], 192 p.

Houtsaeger, C. Les nerfs craniens.
Louvain, Librairie Universitaire, 1932, 876 p.

Hyman, A. S. and Parsonnet, A. E. The failing heart of middle life.
Phil., Davis, 1932, 538 p.

Inmate Ward 8. Behind the door of delusion.
N. Y., Macmillan, 1932, 325 p.

International Committee for the Study of Infantile Paralysis. Poliomyelitis.
Balt., Williams, 1932, 562 p.

Jenkins, G. B. A manual of dissection.
Phil., Lea, 1932, 298 p.

Küstner, H. Gynäkologische und geburtshilfliche Diagnostik in Tabellenform.
München, Lehmann, 28 pl. 51 tab.

Liek, E. Krebsverbreitung, Krebsbekämpfung, Krebsverhütung.
München, Lehmann, 1932, 252 p.

Luria, A. R. The nature of human conflicts.
N. Y., Liveright, [1932], 431 p.

Maurizio, A. Histoire de l'alimentation végétale.
Paris, Payot, 1932, 663 p.

McCord, C. P. Industrial hygiene for engineers and managers.
N. Y., Harper, 1931, 336 p.

Meyer, W. Lehrbuch der normalen Histologie und Entwicklungsgeschichte der Zähne des Menschen.
München, Lehmann, 1932, 247 p.

Murphy, G. and Jensen, F. Approaches to personality; some contemporary conceptions used in psychology and psychiatry.
N. Y., Coward-McCann, 1932, 427 p.

New York Tuberculosis and Health Association. Heart Committee. Criteria Committee. Criteria for the classification & diagnosis of heart disease. 3. ed.
N. Y., N. Y. Tuber. and Health Assoc., 1932, 131 p.

Our neurotic age; a consultation, edited by S. D. Schmalhausen.
N. Y., Farrar, [1932], 531 p.

Ovio, G. La vision des couleurs. 2. éd.
Paris, Alcan, 1932, 457 p.

Pauchet, V. L'automne de la vie; l'homme et la femme à l'âge critique.
[Paris], Oliven, [1932], 338 p.

Reuter, H. Die Technik im bakteriologischen Laboratorium.
[München, O. Gmelin, 1932], 119 p.

Rowe, A. W. The differential diagnosis of endocrine disorders.
Balt., Williams, 1932, 220 p.

Schilling, V. Blut und Trauma.
Jena, Fischer, 1932, 196 p.

Sever, J. W. The principles of orthopedic surgery for nurses. 2. ed.
N. Y., Macmillan, 1932, 267 p.

Stadler, E. Syphilis des Herzens und der Gefässe.
Dresden, Steinkopff, 1932, 82 p.

Thaysen, T. E. H. Non-tropical sprue, a study in idiopathic steatorrhoea.
Copenhagen, Levin, 1932, 258 p.

Tzanck, A. Immunité, intolérance, biophylaxie.
Paris, Masson, 1932, 268 p.

Williams, J. H. H. A century of public health in Britain, 1832-1929.
London, Black, 1932, 314 p.

PROCEEDINGS OF ACADEMY MEETINGS

DECEMBER

STATED MEETINGS

Thursday Evening, December 1, at 8:30 o'clock
Program arranged by the

SECTION OF MEDICINE
and the
NEW YORK GASTRO-ENTEROLOGICAL ASSOCIATION

I. EXECUTIVE SESSION
   a. Election of Officers
   b. Election of Fellows
   c. Report of Nominating Committee

II. Papers of the Evening
  a. Gastro-intestinal manifestations of allergy, Robert A. Cooke
  Discussion, Franklin A. Stevens (by invitation), Albert F. R. Andresen
  b. Gastric achlorhydria and its relation to the blood picture
    1. Digestive aspect, Wm. Bosworth Castle, Boston (by invitation)
    2. Hematological aspect, Nathan Rosenthal (by invitation), Harold A. Abel (by invitation)
    3. Discussion, Joseph E. Connery, Cornelius P. Rhoads
  c. Carcinoma in some chronic ulcerating lesions of the stomach, George W. Holmes, Boston (by invitation)
  Discussion, Ross Golden

Thursday Evening, December 15, at 8:30 o'clock

THE THIRD HARVEY LECTURE

"The Nature of the Menstrual Cycle"

George W. Corner

Professor of Anatomy

University of Rochester, N. Y.

SECTION MEETINGS

Section of Surgery

Friday Evening, December 2, at 8:30 o'clock

ORDER

I. Reading of the Minutes
II. Presentation of Cases
  a. Two cases of Mikulicz resection of descending colon, John E. Sutton, Jr.
  b. 1. Two cases of synovectomy of the knee joint
    2. Two cases illustrating the use of the Nicola operation for dislocation of the shoulder, Russell H. Patterson
  c. 1. Broncho-esophageal fistula, mediastinitis—gastrostomy, retropharyngeal drainage
    2. Carcinoma of the extrinsic larynx—gastrostomy, tracheotomy, and external radiation, William L. Watson
  d. Cases illustrating paper of the evening, Herbert M. Bergamini
III. Papers of the Evening
  a. Observations on the stimulation of bone repair in the treatment of fractures, Herbert M. Bergamini
  b. Fractures of the base of the radius in adults, Nelson W. Cornell
IV. General Discussion
V. Executive Session
  Election of Secretary

Section of Dermatology and Syphilology

Tuesday Evening, December 6, at 8:00 o'clock

ORDER

I. Reading of the Minutes
II. Presentation of Patients
  a. Patients from the Vanderbilt Clinic

b. Miscellaneous patients

III. General Discussion

IV. Executive Session

Section of Pediatrics

Thursday Evening, December 8, at 8:30 o'clock

ORDER

I. Papers of the Evening

a. The value of large sections in the pathological study of pneumonia, Charles Hendee Smith, Irving Graef (by invitation), Elizabeth Torrey Andrews (by invitation)

b. Presentation of report on infant mortality for New York City, Shirley W. Wynne (by invitation)

Discussion, Philip Van Ingen, Bela Schick, Herbert B. Wilcox, Louis C. Schroeder, Shirley W. Wynne

Section of Neurology and Psychiatry

Tuesday Evening, December 13, at 8:30 o'clock

ORDER

I. Reading of the Minutes

II. Papers of the Evening

a. The conditioned reflex in relation to psycho-analytic technic, Lawrence S. Kubie, (15 minutes)

b. Turning points in the analysis of a case of alcoholism, George E. Daniels (by invitation), (15 minutes)

c. The psycho-analytic viewpoint of drug addiction, Sandor Rado, Berlin and New York (by invitation), (35 minutes)

III. Discussion, A. A. Brill, George W. Henry, Smith Ely Jelliffe, Paul Schilder

IV. Executive Session

Section of Orthopedic Surgery

Friday Evening, December 16, at 8:30 o'clock

I. Reading of the Minutes

II. Presentation of Cases

a. From the Hospital for the Relief of the Ruptured and Crippled

1. Cases illustrating the modified loop operation for paralytic equino-valgus, Armitage Whitman

2. Thrombo-angiitis obliterans—collateral circulation of four years' standing induced by excision of segment of femoral artery, Lewis Clark Wagner

3. Congenital dislocation of the hip. Cases showing two stage operation, Paul C. Colonna

4. Fractures of the cervical vertebrae, Barclay W. Moffat

5. X-ray findings in various non-suppurative conditions of the spine, Raymond W. Lewis

b. From the Orthopedic Service of St. Luke's Hospital

1. Treatment of scoliosis by the hinged jacket and fusion—two cases

2. Multiple infectious arthritis. Synovectomy of knee joint
3. Extensive burns of both legs with suppurative arthritis of knee joint treated by skin graft and fusion of knee joint, Mather Cleveland
4. Chronic suppurative osteomyelitis of the tibia of long standing. Excision of tibial shaft. End result
5. Avulsion of tibial tubercle (Osgood Schlatter's Disease) treated by fixation of the tubercle with bone pegs, David Bosworth (by invitation)

SECTION OF OPHTHALMOLOGY

Monday Evening, December 19, at 8:30 o'clock

ORDER

I. READING OF THE MINUTES

II. DEMONSTRATION OF CASES

1. An obscure affection of the conjunctiva simulating Parinaud Conjunctivitis, A. Fine (by invitation)
2. Melano-carcinoma of the inner canthus; excision and endothermy, Clyde E. McDannald
3. Encapsulated hemangioma of the orbit removed by blunt dissection, Henry H. Tyson
4. a. Melano-carcinoma of the bulbar and palpebral conjunctiva. Biopsy
   b. Encapsulated tumor of the orbit removed by blunt dissection
   c. Cases of epithelioma of the lid treated surgically, John M. Wheeler
5. a. Drawings of a case of melano-carcinoma of bulbar and palpebral conjunctiva in different stages of its development and microscopic specimens
   b. Four cases of epithelioma of the lid treated with radiation
   c. Dense pigmentation of the upper and lower lid following excision and radiation of melano-sarcoma of the orbit, Algernon B. Reese
6. a. Sarcoma of the choroid. Enucleation and local recurrence
   b. Epithelioma of the lid; excision and plastic repair, Webb W. Weeks
7. Epithelioma of the lower lid; excision and plastic, Daniel B. Kirby
8. Melano-sarcoma of the iris, locally excised. Drawing before operation and presentation of patient after operation, Andrew Rados (by invitation)
9. Melanoma of the iris, Walter Guernsey Frey, Jr.
10. Melanoma of the iris, E. L. Falk (by invitation)
11. Cyst of the iris (question of sarcoma), Osborne P. Perkins
12. Epithelioma of the limbus. Operated, Ben Witt Key
13. a. Tumor of lacrimal gland
    b. Epithelioma of the lid
    c. Angioma of the orbit
    d. Questionable tumor of the orbit; for diagnosis, Conrad Berens

14. Angioma of the choroid, Francis W. Shine
15. Pseudo intraocular tumor, Willis Knight (by invitation)
16. Tumor of the optic nerve, Olga Sitchevska (by invitation)
17. Orbital lymphoma, Martin Cohen
18. Orbital tumor. X-ray result, Joseph Ziporkes (by invitation)
19. A case of thrombosis of the central retinal vein in which the ocular hypertension was relieved by x-ray treatment, Francis X. Brophy (by invitation)
20. The x-ray and radium aspects of the clinical cases presented was discussed by Ira I. Kaplan

The demonstration of patients began at 7 o'clock.

The Advisory Committee selected some of the cases presenting unusual and instructive features for discussion at the scientific meeting.

Section of Genito-Urinary Surgery

Wednesday Evening, December 21, at 8:30 o'clock

ORDER

I. Reading of the Minutes

II. Presentation of Cases

1. Hypernephroma, metastases in lungs disappearing spontaneously. E. Beer
2. Review of 163 kidney tumors, A. Hyman
3. Benign hypernephroma of kidney, L. Edelman
4. Sodium-ortho-iodo-hippurate, a new preparation for intravenous and oral urography, M. Swick (by invitation)
5. Welch bacillus infection following kidney operation; culture of calculi showing Welch bacillus, E. Beer
6. Two bladder diverticula recurring after operation, L. Mann
7. Caliceal pathology, W. Mencher
8. Analysis of causes of persistent suprapubic fistula, E. Beer
9. Long continued fevers following removal of tuberculous kidney, miliary tuberculosis, L. Edelman
10. Extravasation of opaque fluid in renal and ureter pathology, as demonstrated in urograms, E. Beer
11. Five cases of total cystectomy for carcinoma of the bladder, etc., L. Mann
12. Metastatic adeno-carcinoma of bladder, 12 years after hysterectomy, E. Beer
13. Unsuspected urinary pathology discovered by excretory urography, W. Mencher
14. Contradictions between excretory and retrograde uretero-pyelography, M. Swick (by invitation)
15. Remarks on trans-urethral prostatic resection, A. Hyman

Section of Otolaryngology

Wednesday Evening, December 21, at 8:30 o'clock

ORDER

I. Reading of the Minutes

II. Paper of the Evening

Diathermy: results; good, bad or indifferent in nose, throat and ear conditions, Lee M. Hurd

Discussion, David H. Jones, Henry H. Forbes, Wallace W. Morrison

III. General Discussion

IV. Executive Session

Clinical demonstration of methods employed in diathermy at Polyclinic Hospital, 335 West 50 Street, New York, December 21, at 3 p.m., Lee M. Hurd, Wallace W. Morrison

Section of Obstetrics and Gynecology

Tuesday Evening, December 27, at 8:30 o'clock

Program arranged from the Clinic of

The Margaret Hague Maternity Hospital

Jersey City, New Jersey

I. Reading of the Minutes

II. Presentation of Cases (ten minutes each)

a. A case of erysipelas with placental transmission of streptococcus hemolyticus, Jacob Goldstein (by invitation)

Discussion, Arthur M. Reich

b. Three cases of spontaneous rupture of the uterus, Edward G. Waters (by invitation)

Discussion, Samuel J. Scadron, Nicholas M. Alter (by invitation)

c. A case of atelectasis of the newborn (typical lesions), Nicholas M. Alter (by invitation)

d. A case of conservative treatment of grave renal infection complicating pregnancy, James F. Norton (by invitation), V. P. Butler (by invitation)

Discussion, Isador W. Kahn.

III. Papers of the Evening (fifteen minutes each)

a. Some observations on the blood sugar level during eclamptic convulsions, Jessie D. Read (by invitation)

Discussion, Jean Corwin (by invitation)

b. The incidence and treatment of eclampsia, an analysis of 123 cases, Joseph Binder (by invitation)

Discussion, Walter B. Mount (by invitation)

c. Some changes occurring in the urinary tract during pregnancy, Irving J. Strumpf (by invitation)

Discussion, Meredith F. Campbell

IV. General Discussion

V. Executive Session

New York Roentgen Society

In affiliation with

The New York Academy of Medicine

Monday Evening, December 19, at 8:30 o'clock

ORDER

I. 8:30 to 9:00 o'clock

Demonstration and discussion of interesting cases

II. 9:00 o'clock
Mediastinal tumors and their differentiation, George E. Pfahler, Philadelphia, Pa. (by invitation)

III. General Discussion

IV. Executive Session

New York Meeting
of the
Society for Experimental Biology and Medicine
Under the auspices of
The New York Academy of Medicine
Wednesday Evening, December 21, at 8:15 o'clock

1. Etiology of an Uncomplicated Coryza in the Domestic Fowl, J. B. Nelson (Introduced by C. Ten Broeck)
2. Herpes Antiviral Substances: Distribution in various Age Groups and Apparent Absence in Individuals Susceptible to Poliomyelitis, E. R. Weyer (Introduced, by S. Flexner)
3. Variation of *H. influenzae* During Acute Respiratory Infection in the Chimpanzee, A. R. Dochez, K. C. Mills, Y. Kneeland, Jr.
4. Removal of Intravenously Injected Antigen by Circulating Precipitin, J. T. Culbertson (Introduced by F. P. Gay)
5. A Syndrome Produced in the Dog by Inclusion of Oxidized Fat in the Diet, D. V. Whipple (Introduced by D. W. Wilson)
6. Blood Volume in Normal Chicks and in Chicks with Nutritional Encephalomalacia, A. M. Pappenheimer, S. Graff
7. The Central Nervous System in Relation to the Digestive Functions, J. H. Ferguson (Introduced by J. F. Fulton)
8. Comparative Frequency of Peptic Ulcers after Deprivation of Bile and Pancreatic Juice, B. N. Berg, T. F. Zucker

New York Pathological Society
Thursday Evening, December 22, at 8:30 o'clock

ORDER

I. Presentation of Pathological Specimens

II. Papers of the Evening
   a. The comparative anatomy of the semilunar cartilages of the knee joint, Henry L. Jaffe
   b. A case of moniliosis with meningitis, Lawrence W. Smith
   c. Myeloid leukemia with osteosclerosis, Sheldon A. Jacobson (by invitation)
   d. Multiple hemangioblastomas of cord with syringomyelia and cysts of pancreas and kidneys (partial Lindau's disease), Abner Wolf (by invitation), Sigmund Wilens (by invitation)

III. Executive Session

FELLOWS ELECTED DECEMBER 1, 1932

Nathan B. Heller.....31 Lincoln Park, Newark, N. J.
Cassius L. de Victoria .....1013 Lexington Avenue
George E. Muehleck.....125 East 84 Street
Edmund Prince Fowler.....140 East 54 Street
Edward F. Hartung.....115 East 61 Street
Locke Mackenzie.....535 Park Avenue
Sidney D. Leader.....770 West End Avenue
Isidor Apfelberg.....239 East 19 Street
Emmett A. Dooley.....135 East 65 Street
Jacques M. Lewis.....495 West End Avenue
S. Bernard Wortis.....410 East 57 Street
George A. Blakeslee.....105 East 53 Street
Otto V. M. Schmidt.....111 East 61 Street
Thomas D. Van Orden.....47 East 66 Street
Hugh M. Hicks.....121 East 60 Street
Michael Ringer.....3 West 73 Street

ASSOCIATE FELLOWS ELECTED

Erwin Brand.....722 West 168 Street

DEATHS OF FELLOWS OF THE ACADEMY

Henry Smith Bartholomew, M.D., Napanoch, N. Y., graduated in medicine from the University of the State of New York in 1897; elected a Fellow of the Academy February 5, 1915; died, December 20, 1932. Dr. Bartholomew was Physician and Surgeon to Veteran's Memorial Hospital, Ellenville, N. Y. and had served as health officer of Napanoch.

OFFICERS OF SECTIONS AND AFFILIATED SOCIETIES, 1932-33

Dermatology and Syphilology, 1st Tuesday

Chairman	*Secretary*
A. Benson Cannon	Louis Chargin
371 Park Avenue	1 West 85 Street

Surgery, 1st Friday

William Barclay Parsons, Jr.	Ralph Colp
180 Ft. Washington Avenue	111 East 88 Street

Neurology and Psychiatry, 2nd Tuesday

Byron Stookey	Clarence P. Oberndorf
151 East 83 Street	112 West 59 Street

Historical and Cultural Medicine

2nd Wednesday of November, January, March and May

C. N. B. Camac	Howard Reid Craig
76 East 56 Street	175 East 79 Street

Pediatrics, 2nd Thursday

John Caffey	Harry Bakwin
Bard Hall, Haven Avenue	132 East 71 Street

Ophthalmology, 3rd Monday

Mark J. Schoenberg	Algernon B. Reese
1160 Park Avenue	73 East 71 Street

Medicine, 3rd Tuesday

Robert F. Loeb	Henry J. Spencer
Presbyterian Hospital	24 West 10 Street

Genito-Urinary Surgery, 3rd Wednesday

George F. Hoch	C. Travers Stepita
115 East 61 Street	2 East 54 Street

Otolaryngology, 3rd Wednesday

Charles J. Imperatori	David H. Jones
108 East 38 Street	140 East 54 Street

Orthopedic Surgery, 3rd Friday

Mather Cleveland	Paul C. Colonna
115 East 61 Street	59 East 54 Street

Obstetrics and Gynecology, 4th Tuesday

Francis W. Sovak	Frederick C. Freed
117 East 72 Street	59 East 54 Street

The New York Roentgen Society, 3rd Monday

President	*Secretary*
J. Bennett Edwards	C. Wadsworth Schwartz
144 Woodridge Pl., Leonia, N. J.	33 East 68 Street

Society for Experimental Biology and Medicine, 3rd Wednesdry

Dayton J. Edwards	A. J. Goldford
First Avenue and 28 Street	Convent Avenue and 139 Street

Harvey Society, 3rd Thursday

Alfred F. Hess	Edgar Stillman
16 West 86 Street	22 East 69 Street

New York Pathological Society, 4th Thursday

Paul Klemperer	Maurice N. Richter
378 Central Park West	630 West 168 Street